SIRIUS FEDERAL TERRITORY

Sirius Educational Center

Sirius University of Science and Technology

22 31 DECADE OF SCIENCE AND TECHNOLOGY
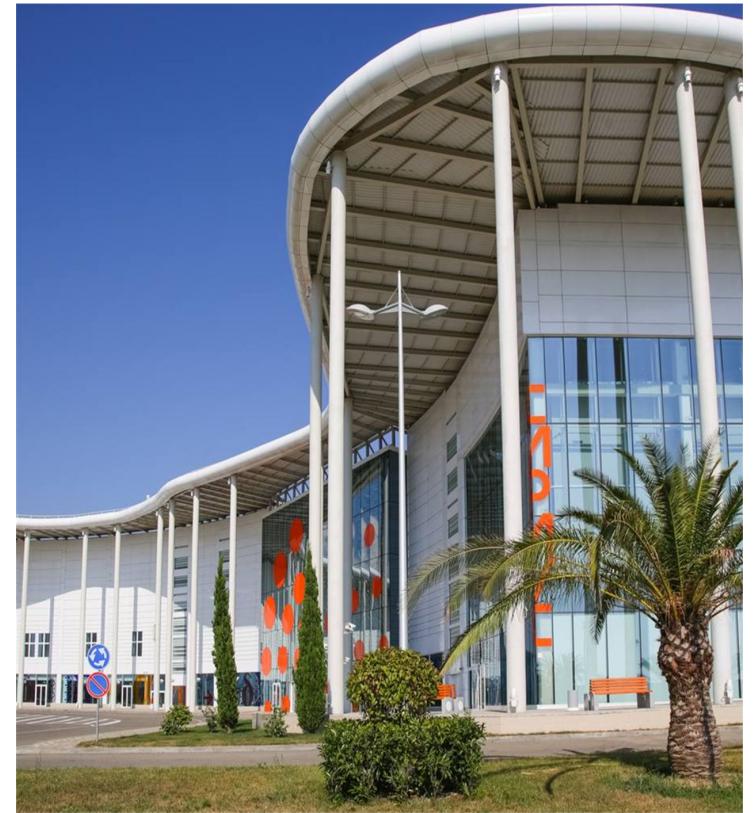
November 28-29, 2025

YOUNG SCIENTISTS HACKATHON 2025

Background

The Sirius University is rapidly expanding, attracting talented students, scientists, tutors, and researchers with diverse competencies and scientific interests.

The growing number of students and staff creates new organizational challenges: it is difficult to quickly assess the achievements of individual researchers, form teams, and encourage collaborative research. To effectively manage the team and foster the development of interdisciplinary research, we need a platform that unites all members of the university community and allows for objective tracking of each specialist's scientific productivity and impact.

About the case

Academic Profile:

A Scientist's Digital Footprint

Goal: To create an intelligent service for the automated collection, systematization, and visualization of publication activity for the university's staff, students, and postgraduate students.

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Core Functional Requirements

1. Automated data collection on publications by the university's staff, students, and postgraduate students from various abstract and bibliographic databases, digital archives (Google Scholar, Scopus, Web of Science, RSCI, MathSciNet, PubMed, arXiv.org, Crossref). This should utilize page parsing/open APIs.

2. Analysis of individual key metrics for publication authors (citation impact, h-index, affiliation, authorship contribution).

3. The ability to manually edit author profiles (.xls, .csv). When using Django, configure editing via Django Admin (using a local administrator).

4*. Construction of a knowledge graph and search for communities within it by research areas, disciplines, and staff.

5*. Generating recommendations for potential collaborative research within the university.

Work Plan

Checkpoint 1:
Author Profile Generation

Goal: Develop a REST API for an author profile.

Expected Outcome:
★ REST API with Swagger documentation for CRUD operations.
★ Description of methods and data models with sample test data.
★ Interface mock-ups and main screen designs.
★ Selected ML model and developed data processing method.

Checkpoint 2:
Graphical User Interface

Goal: Develop an interface to collect, analyze, and visualize key author metrics for a research group.

Expected Outcome:
★ Automated monthly data collection, processing, and storage.
★ A trained ML model using the initial dataset.
★ A configured API to provide processed data for visualization.
★ An initial dataset of publications from the research group.

Checkpoint 3:
Related Components Development

Goal: Create a functional UI integrated with the backend.

Expected Outcome:
★ A working solution with core features and a refined user interface.
★ Detailed scientist profiles showing publications, citations, and productivity metrics.
★ A proposed recommendation system for forming interdisciplinary teams.
★ Complete project documentation and project is launched using Docker.